April 2015

# Teaching Practicum at Bancroft School

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# Teaching Practicum at Bancroft School

Interactive Qualifying Project Report completed in partial fulfillment

of the Bachelor of Science degree at

Worcester Polytechnic Institute, Worcester, MA

by

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Submitted to: Professor John Goulet

Date: April 29, 2015

## Abstract

This paper discusses my experience at Bancroft School as a teaching assistant and tutor. I started working at Bancroft School in September of 2014 and culminated my time there at the end of April. I have attended the math periods for three different fourth grade classrooms throughout this time and provided tutoring and guidance to students in order to complete the Interactive Qualifying Project requirements. This paper also covers the different roles I played during my time at the school, the challenges I faced, sample problems, and discussion of the textbook *Math in Focus* used in the fourth grade published by Marshall Cavendish Education, which applies the Singapore Approach.

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# Introduction

Through the months of September 2014 to April 2015 I worked at Bancroft School on a Teaching Practicum in order to fulfill my requirements for the Interactive Qualifying Project at Worcester Polytechnic Institute. Bancroft School is a private school in Worcester that teaches kindergarten to 12$^{th}$ grades. While there, I was a teaching assistant for three different fourth grade classrooms during their math periods in the mornings. Each classroom had about 14 to 15 students and, included in that count, around 2 per classroom had a language-based learning disability. My main responsibility was to work with the children with language-based disabilities but I also ended up working with a great spectrum of the kids in these 3 classrooms.

I chose this project because of how much I like math and working with children. This project was a great opportunity to join together two things I like and give back to the community of Worcester while doing so. After this year I gained a lot of perspective as to how kids react to different styles of learning and how to better assess each kid's unique talents and ways of understanding material.

# Experiences at Bancroft School

During my time at Bancroft School I worked with three different fourth grade classrooms, each with teachers who had different teaching techniques and approaches towards the material. My primary job was to help teachers by providing one on one help to students with language based learning disabilities. Apart from this I also aided in challenging students who were further ahead in the current math topics. I encountered two challenges in particular. These being finding different ways of teaching and explaining the material to the different students and also challenging those that were further ahead with problems relating to the current topics discussed in class.

## Day to Day Experiences

Every school day for the past 8 months I have arrived early in the mornings at Bancroft School to work with teachers and students in the fourth grade during their math periods. During the first 6 months I only worked with two of the three fourth grade classrooms and went to each classroom on alternating days. For the last two months I was asked to also work with the third fourth grade classroom due to popular demand of students and parents wanting me to work with them during their math periods. All three classrooms have similar morning routines and tried their best to maintain the same schedule when it came to their math curriculums and the material they were covering each week.

In the mornings, I would arrive and help out the students with morning math. Morning math is a method the teachers employ in the mornings where they write a math related question on the board and before the math period starts the students must answer the question in their math journals in order to be able to go to recess later in the day. The questions on the board usually are related to review material that might have been covered as early as the day before or practice regarding the mechanics of long division or multiplication problems.

Once the morning starts, all of the classrooms recite the Pledge of Allegiance and then go into morning calendar. Morning calendar is another method of practicing math in the mornings. Each month there is a different pattern on the calendar which the students have to uncover and for every day of school

they add money to a counter and practice place value counting. This is a very effective method of having the students practice mental multiplication skills and the understanding of place value of whole numbers. I mention multiplication skills since in order to add money to their counter they need to mentally multiply the current day value by a certain amount and then add it to the rest of the days they've been in school for that month. Then they get to add paper money onto their counter which is split into the different place values from ones to millions. I believe this is a fun method for the teachers to get the students engaged in practicing mental math. The students are always excited for morning calendar and it has proved to be effective in getting the students interested in the topic.

In comparison to two of the fourth grade classrooms, before starting calendar time, one of the teachers always has a morning meeting. In this morning meeting the kids get to say good morning to each other, the teacher, and myself using a silly gesture. After that, the teacher gives them a chance to tell a story about what they did during the weekend or just share something that interests them. I find this morning meeting to be a great way of engaging with the fourth grade students and not only have them see you as a person to respect and listen to, but also a friend who is interested in their well-being and adventures. The children in this classroom are the ones who I have connected with the most and have had the easiest time talking to and explaining math concepts. I feel that this ease of communication is strongly related to the relationship that I have created with them during the mornings and have found this time to be enriching towards the teaching process.

Once the morning routine is over the math period has begun. Usually each teacher would assign me a group of students that I would take outside of the classroom into a separate location and go over the same or new material with them. On most occasions the students I took out of the room have a language-based learning disability and require more one on one attention when learning new material. A language-based learning disability is a disorder that affects young children's age appropriate academic skills. The skills affected include reading, writing, and spelling. Although my time at Bancroft took place in a math setting, these skills are invaluable towards understanding and practicing math concepts.

As mentioned, in a separate room I sometimes go over the same material that the teacher will be discussing with the rest of the class. The *Math in Focus* textbook used in the fourth grade is structured in a way that allows teaching a concept by example, and then having the student do a practice problem similar to the one explained right before. I read over the section and explain the examples provided by the book and then do the practice problems with them right after, making sure that they ask any questions they may have had and clarifying the material as much as possible. Once we go through the examples in the section we go into the Guided Practice and the Let's Practice sections, which are problems that relate to the current lesson. Apart from going through the lessons on the textbook, we also work on the workbook problems that relate to the lesson just covered. The students are encouraged to work on the problems on their own but if it were to happen that the majority are having trouble understanding how to find the answer I get them all to stop working and then go over the problem with them step by step.

When explaining how to solve a problem that students don't understand, I have found that using visuals is most effective. If I try just telling them what they are supposed to do they won't truly learn how to find the answer but if I show them it will stick. I always had a blank piece of paper and a pencil with me in order to be able to explain the problems visually. While explaining with visuals I always made sure to pause and ask them what they thought the next step should be. This gets the students reasoning and encourages them to think of the solution themselves although I am guiding them slowly through the steps. I believe that if I were to just give them the solution or the exact process without making them think, I am not doing a good job as a teacher.

Another thing I did with the students in the fourth grade was taking those that showed remarkable understanding of the material to a separate room and have them work on more complex word problems that related to the same material. The teachers provided all the problems that I had them work on. It was always interesting to see how these students reason and find different ways of solving the same problem. Most of these students that were further ahead have parents who teach them different math concepts

before they arrive to them at school. I believe that this is a good idea but I can see the downfall to it and the challenge that it presents to teachers in the classroom setting.

## Challenges Encountered

While teaching at Bancroft School I faced three challenges: students that were too ahead on material, finding multiple ways of explaining the material, and students who got discouraged when they did not understand how to solve a problem. I have learned how to approach these in different occasions but it was always different depending on what student I was working with. Not every student learns in the same way and it is important to try and cater things to each individual as opposed to approaching each student the exact same way.

Working with students that are too ahead on material can be a challenge since it is hard to keep them interested in the material and behaving in class since they already know what the teacher is explaining. The teachers I worked with were having a difficult time trying to not only pay attention to the rest of the classroom that did not know the material, but also challenging these students simultaneously. There is only so much one teacher can handle at the same given moment when in charge of 15 students and my role was to help them out by taking these kids separately and giving them more challenging work as they continued working with the rest of the class. These students get bored easily when going through the same problems that practice the mechanics as opposed to challenging them to reason how to apply that concept to solve a problem. The best way to keep them intrigued and entertained is by having them work on word problems that not only require knowing how to do the math but also reasoning skills in order to understand what the question is asking and how to find the answer.

Another challenge I faced during my time at Bancroft School was finding ways of engaging the kids in the material and have them not feel bad when they did not understand it. Many times I would explain a problem after a student asked for help and have the student become frustrated because even after my explanation they still did not understand. Since I sometimes worked with groups of students instead of one at a time, when one student had trouble with a problem but then the other students in the

group were getting the answers faster, the one student would become frustrated and start guessing answers or lying about understanding the material in order to not look bad in front of the rest of the students. For this reason I think that once you get a good understanding of the students you are working with and their individual needs, it is good to separate them and tutor them apart in order to give them your undivided attention as needed.

With students at different levels all waiting for me to direct them it was hard sometimes to cater to all of them without leaving one of the students without understanding or leaving another with nothing to do. As the year progressed I got better at this since I would ask the teacher for a group with similar levels of understanding and therefore could keep the tutoring for all of the students in the group at the same level during the morning math period and cater to all of them appropriately. I always felt unsatisfied when a math period would end and one of the students lost confidence in their math capabilities or just did not understand the math concept that we were practicing.

The last challenge I encountered during the past year was looking for multiple ways of explaining the same problem in different ways. Sometimes one approach would not accomplish the task of explaining how the solution to the question is found. As a third year college student some answers to the problems fourth graders are working on seem obvious or have a different way of finding the answer which is easier for me but which a fourth grader is not ready to perform. It was challenging sticking to what was taught in class as opposed to explaining the problem solution using different methods but I found that sometimes it was necessary in order to have the students truly understand. The best way to explain problems was by first trying to ask questions that can guide the students through the solution steps but then if they did not understand use drawings and illustrations to explain. As I will discuss in a later section of this paper, the best way for me to explain word problems was by drawing out illustrations as to what we were trying to calculate and manipulate the images as I went through the problem and steps along with the students. This helped the students work through the problem and mimic my way of rationalizing a question in order to then apply similar logic to a different but similar problem.

## Takeaways

During my time at Bancroft School I tried working as hard as possible to prevent students from losing confidence in themselves but learned that in some cases having students be more confident in their own work and abilities also has a great deal to do with the pressure put on them at their homes. One student in particular, whom I'll call Mary in order to maintain confidentiality, showed me how important it is to help kids become more self confident and trusting of their abilities.

At home, Mary is under a lot of pressure to meet up to the expectations of her older brother. While working with her one day I noticed how sad, frustrated, and discouraged she would get as soon as she didn't understand a problem or got the answer incorrect. Whenever I tried to help her it seemed to take a long time before I could get her to try again and have a little more self confidence when approaching these problems instead of psyching herself out. As the math period progressed she opened up about how she's not supposed to be counting with her fingers anymore since she was told not to do so, that she should only do mental math. I felt sad after hearing that and told her that if it helps her get the answer it's ok to do it and that even I find myself using my fingers to count when trying to approach a problem every once in a while. This made her laugh and gave her the confidence to keep working with me throughout the rest of the year. I felt good about having brought a smile to her face and helping her not lose interest in math.

This experience with Mary moved me. It taught me that I shouldn't judge a student's lack of performance so quickly and assume that they just don't want to do the work being assigned. Every student has a way of having his or her best work shine through. Although many students perform better under pressure, a teacher must also be able to recognize which students do not and what is the best way to help them. Mary taught me this very early during my time at Bancroft and it helped me better understand other students who maybe felt pressure to do better because of the other kids in their classroom answering questions faster or also having pressure to do better from their homes.

At Bancroft School I worked with a broad range of students and they all taught me many different things. Amongst them another student who taught me something valuable was Shane, who's real name I have omitted in order to provide confidentiality. Shane has a language based learning disability and takes medication every morning in order to help him concentrate during his classes. He is a brilliant student but often did not get his work done in a timely manner during class because he would lose track of time and start thinking about other things. It was often a challenge to get him to concentrate on his work but it taught me how to be patient, caring, and also how to make the material more interesting so that he could go through the work faster.

At the beginning of the year, Shane would barely get any work done during the math period but as the year progressed he really impressed me with how far he came along. I saw his progression throughout the year and saw how hard he was trying to work through the problems and I am proud of what he has accomplished. He used to need a lot of guidance and prompting in order to work through the steps of a problem but during my last few weeks I noticed how independently he was working and how he was getting his answers correct as well. He has come a long way and it is evident how much more confidence and interest he has for math.

Bancroft School is full of many talented and smart students who work hard during class time and at home. I was thoroughly impressed with the motivation these students had towards learning new things every day and how they approached everything eagerly and enthusiastically. I believe that this motivation has a lot to do with the teachers that they have had and how they try to cater everything towards each students individual needs in order to have all of them not only learn but also enjoy the process of learning. I have learned an incredible amount about how to approach each student individually and how to make material more interesting for younger minds and feel better prepared to jump into another experience like this one someday.

## Sample Problems

As I mentioned previously, one of the challenges I encountered during my time at Bancroft School includes finding new and multiple ways of explaining one problem. Even though one solution might make sense to one student there might be an equivalent solution that would better explain the problem to another student. Finding these equivalent solutions can sometimes be a challenge but I found that being creative and using drawings to explain the steps of a math problem usually worked best for all students.

One of the most successful days I had at Bancroft was working with a group of 4 students on word problems. One particular problem had them stumped. This problem stated that a teacher gave 7 apples to each of her students and had none left over, but when she had only given 4 apples to each student she had 18 apples left over. The problem then asked them to figure out how many students this teacher had. A sample of what I did to explain this problem is provided in Appendix A of this report.

When I first read the problem I immediately thought that there were 3 apples left to be handed out per student so therefore I could divide 18 by 3 and figure out that the teacher has 6 students in total. Although this seemed easy to me, it was hard to explain to them since I couldn't tell them to divide (they had not covered this chapter yet). Therefore I resulted to sketching out what was going on in the classroom of the stated problem.

I drew a basket and wrote the number 18 beside it representing the amount of apples left to distribute. Then I drew 10 imaginary students with a number 4 below each one. I asked them how many apples each imaginary student was missing to get to 7 apples and they quickly replied '3 apples' while trying to understand what I was doing. I then said that we had to start subtracting 3 from the total amount of apples in the basket (18) and give them to an imaginary student. I explained how once that imaginary student had 7 apples, they were no longer considered imaginary but were to be counted as one of the teacher's students. I changed the number in the basket to 15 and asked them to subtract 3 again. When

they did, they said there were now 12 apples in the basket and another imaginary student now had 7 apples.

All of the students I was working with that morning got very excited because they were understanding what was happening and how they could figure out the total amount of students that the teacher had. They all continued the problem and arrived at the solution that the teacher had 6 students, each with 7 apples. I felt very accomplished at the end of that day's math period because of this problem and how I managed to help 4 students understand how to solve it. They all told their teacher about how much fun they had working with me that day and how easy the problem was now that they visualized it in this new way.

The above stated problem is just one of many that involved the use of visuals in order to better understand how to find the solution. One other method employed by the book and teachers is the use of bar models. Bar modeling is when you are given a statement regarding how much of a certain thing there is in comparison to another and you draw it out in order to figure out your total amount between the two things being compared in the statement. The students quite honestly did not like bar models. They found them to be very confusing and struggled using them by themselves but whenever a teacher or I would go through a problem with bar models they would understand such problem with more ease. It was unclear to me and the teachers why these bar models caused so much dissonance and therefore the teachers opted to not enforce the use of these as much as just mental reasoning of what to do. The book has many examples related to bar modeling and to me it has a good explanation as to how to use them – I still do not understand why these bar models caused so much trouble.

# Textbook Commentary

The *Math in Focus* textbook by Singapore Math uses the Singapore approach to teach math to elementary grade students. In the country of Singapore, the math scores of their students have ranked higher than those of the students in the United States consistently. This is strongly attributed to the curriculum used in Singapore where the main focus is on mastering the mathematical concepts as opposed to memorizing them for an exam. Through what I saw during my time at Bancroft School I would agree that the textbooks from Singapore Math are very effective in enforcing the mastery of the current subject as opposed to just memorization.

The textbook uses many visuals in order to aid in the understanding of place value. This is seen immediately in the very first lesson, Lesson 1.1, as shown in Appendix B. Being able to visualize what each position is and how they are related to each other is very useful and I believe helped the students understand how place value works. The book teaches the students how for every ten in one place value position you increment on to the next position and the visuals in these pages aid in showing that as well.

Chapter 3 of the fourth grade textbook introduces the students to multiplication and long division. Similarly to the first chapter, it uses visual aids to help the students understand what happens to the place values of different numbers when you multiply and how to use these visual aids to help you multiply. This is called modeling multiplication with regrouping as seen in Lesson 3.1 of Appendix B. Lesson 3.3, in Appendix B, moves onto modeling division with regrouping just like multiplication was originally taught in Lesson 3.1. The example shown in Appendix B for Lesson 3.4 shows how the book also teaches long division in the original manner and works through all of the steps in the book along with explanations as to what was done at each step. I believe that this helps the students since they can go through the mechanics but also read how each step that they're going through would be described. Finally, the same chapter introduces them to word problems where they can reinforce what they just learned in a new and fun way. This enables them to understand the real world applications of the math

concepts they just learned and therefore stimulates more interest in the subject. An example of this is seen in Lesson 3.5 in Appendix B.

The textbook goes into further applications of division in chapter 5 where the students are exposed to means/averages, medians, and modes. This is a good transition into the use of tables and charts in order to reinforce these concepts and relate the math to real world applications. In Lesson 5.1, as seen in Appendix B, the students are first introduced to the subject of averages and the textbook once again uses visual aids to further explain what the students are being taught. I find the visuals throughout the book and the step-by-step explanations very helpful. The textbook then moves onto Chapter 6 where fractions and mixed numbers are introduced and like for Lesson 5.1, the book does a great job using visuals to aid the students understanding of what they are learning and how to apply it. This is seen in both Lesson 6.1 and 6.3 in Appendix B.

From first hand experience working with these textbooks I believe that they are very effective and allow for a certain degree of independence from the students. By this I mean that the students could open up the textbook and learn the math concepts by themselves without much help from the teacher because of how the book is structured. The visual aids and clear explanations allow this to be possible. Apart from very good explanations the book also incorporates a lot of practice after each lesson. There is practice as you go through the new material and then there is more practice after you've finished the entire lesson. Apart from the textbook the workbook goes hand in hand with the material that has been taught and challenges the students at the end of each lesson's practice problems by making them think in more creative ways how to apply the math that they have learned. In these more challenging problems the workbook covers real life applications that stimulate the students interest since the problems are related to things the students could find useful at their age.

# Conclusion

After concluding my time at Bancroft School I can say that I have learned so much and really grown as a person overall. I have learned how important a teacher student relationship is and how to better communicate and cater to different students with different needs. Nothing is more rewarding to me than seeing a student enjoy math and be exited when they are learning new things.

The students at Bancroft School are amazing individuals that have inspired me to continue working with younger aged students in stimulating their interest in mathematics and sciences. The faculty there is also amazing and has shown my how important it is to show students that you truly care about them and having them understand new material. They make everything fun in some way and I have never met students who are always exited to start a new project or learn new things in math. It has been a truly rewarding experience that I would not trade for anything.

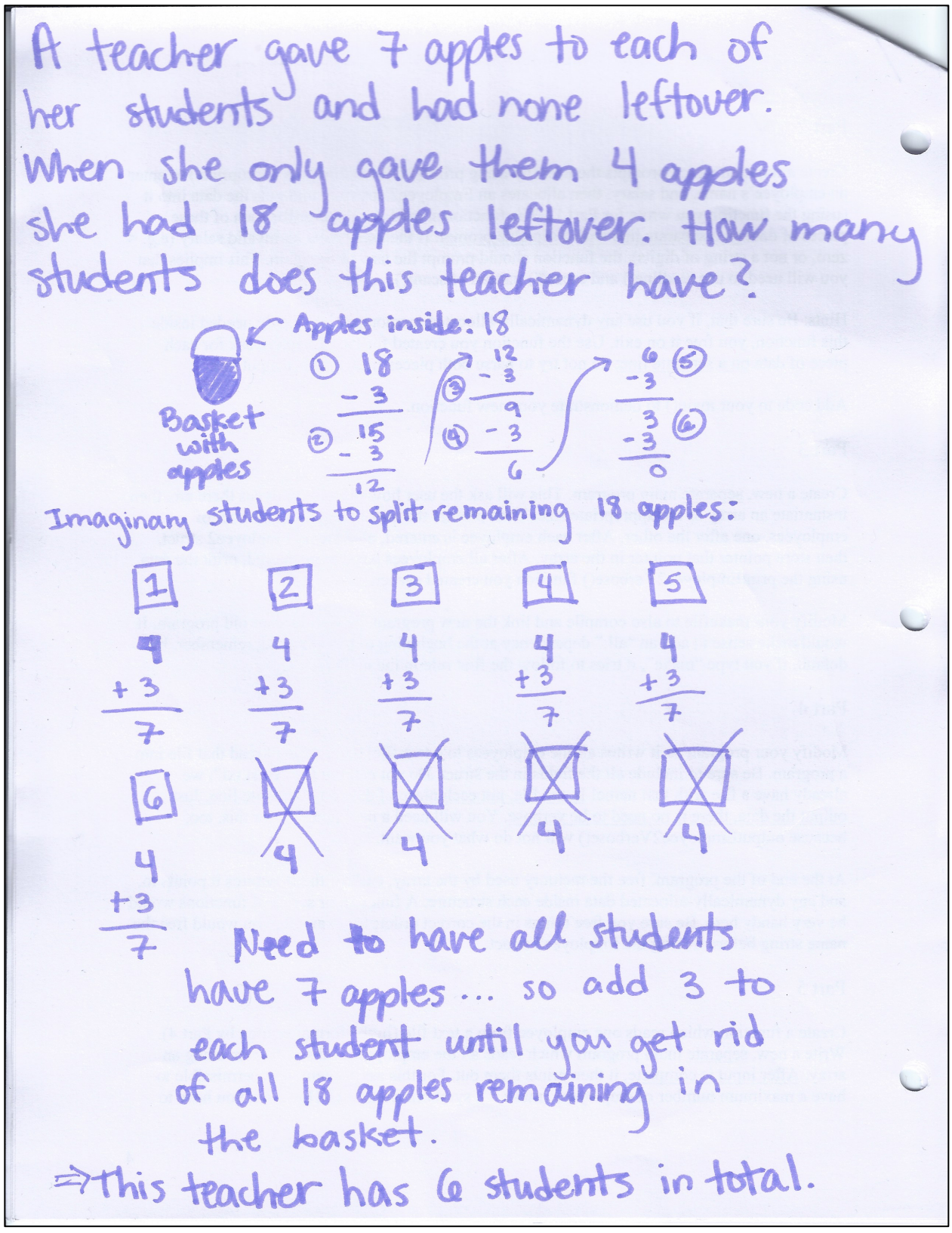
This experience at Bancroft School opened my eyes to many effective ways of communicating with younger students and stimulating their interests and I have been able to apply the multitude of things I have learned throughout this past year not only with the students at Bancroft, but also with other young children I interact with regularly. I am thankful for this experience and for all that it has taught me.

# References

Fong, H. (2013). *Math in Focus Singapore Math Grade 4 Student Book* (Student book). Marshall Cavendish Education.

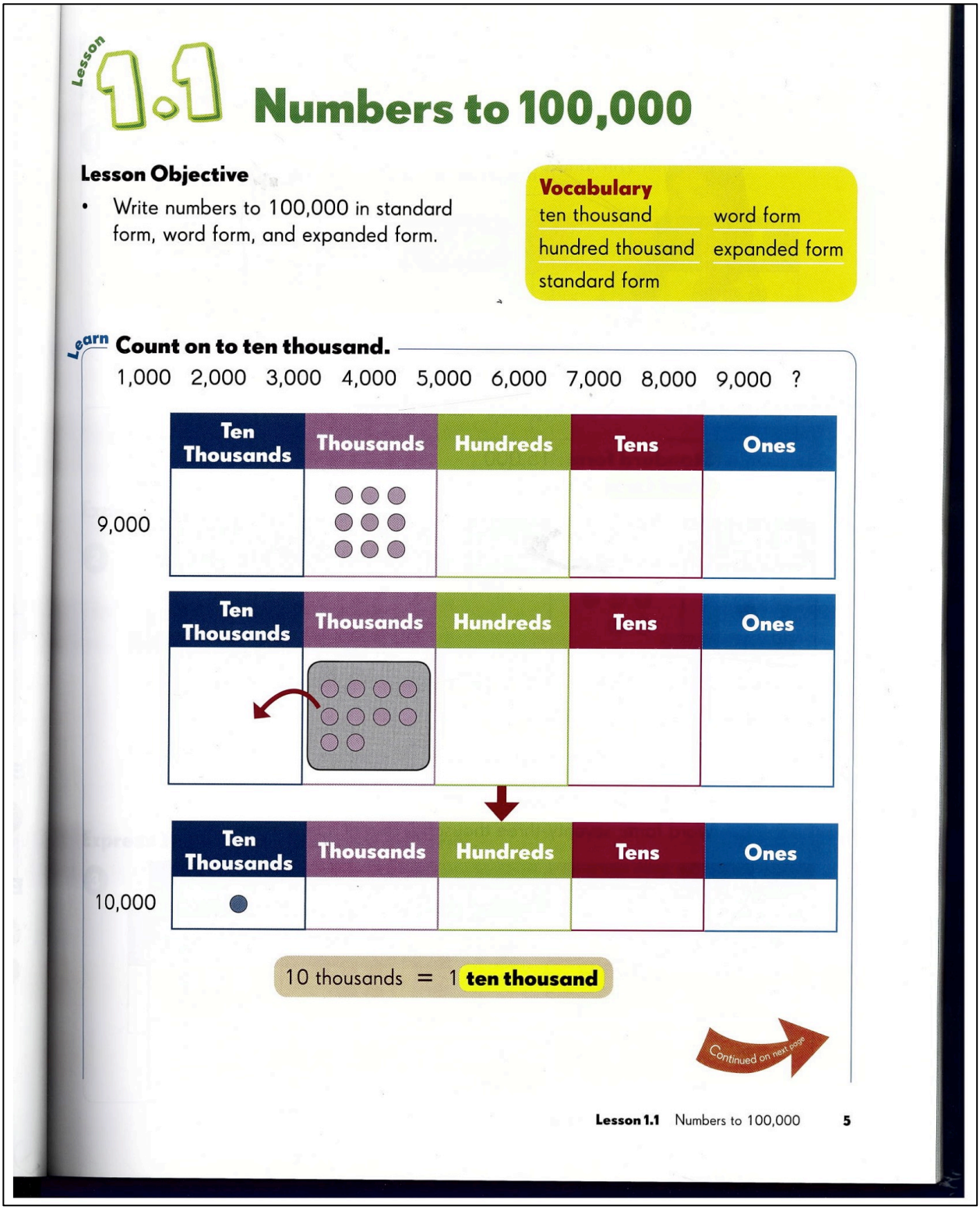
Lewis Brown, L. *What's Singapore Math?* PBS Parents. Retrieved April 15, 2015, from http://www.pbs.org/parents/education/math/math-tips-for-parents/whats-singapore-math/

## Appendix A – Sample Problems



# Appendix B – *Math in Focus* Textbook Page References

Lesson 1 - page 5



Lesson 1.1 Numbers to 100,000

**Lesson Objective**

- Write numbers to 100,000 in standard form, word form, and expanded form.

**Vocabulary**

ten thousand
hundred thousand
standard form
word form
expanded form

Learn **Count on to ten thousand.**

1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 ?

| | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|---|
| 9,000 | | ● ● ● ● ● ● ● ● ● | | | |

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| | ● ● ● ● ● ● ● ● ● ● | | | |

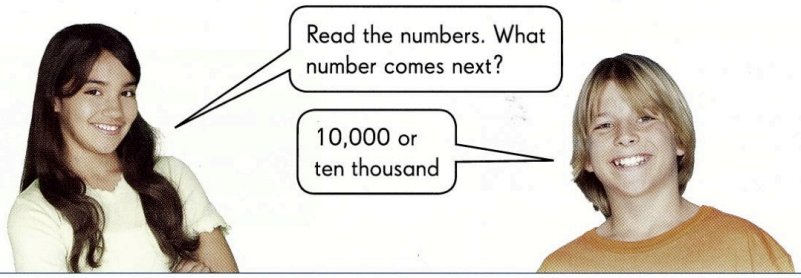
| | Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|---|
| 10,000 | ● | | | | |

10 thousands = 1 **ten thousand**

Continued on next page

Lesson 1.1 Numbers to 100,000 5

1,000 2,000 3,000 4,000 5,000 6,000 7,000 8,000 9,000 ?




**Learn** **Read and show numbers in place-value charts.**

**Standard form**: 15,000
**Word form**: fifteen thousand

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| ● | ● ● ● ● | | | |
| 1 | 5 | 0 | 0 | 0 |

Standard form: 73,486
Word form: seventy-three thousand, four hundred eighty-six

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| ● ● ● ● ● ● ● | ● ● ● | ● ● ● | ● ● ● ● ● ● | ● ● ● ● ● ● |
| 7 | 3 | 4 | 8 | 6 |

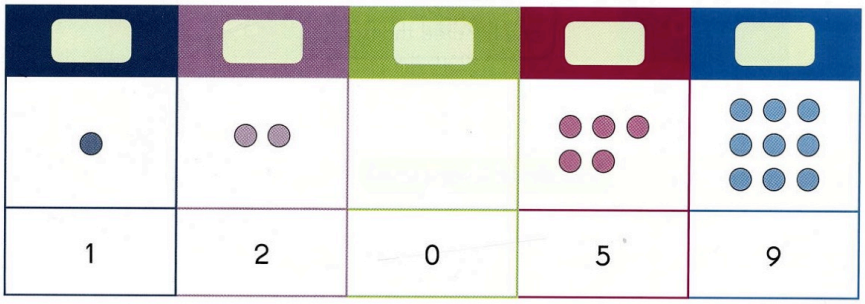


**Guidec**
**Find the**
1
**Express**
2
**Express**
3

## Guided Practice

**Find the missing headings.**

**1** Standard form: 12,059
Word form: twelve thousand, fifty-nine



| | | | | |
|---|---|---|---|---|
| | | | | |
| 1 | 2 | 0 | 5 | 9 |

**Express the number in word form.**

**2** Standard form: 56,817
Word form:

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| 5 | 6 | 8 | 1 | 7 |

**Express the number in standard form.**

**3** Word form: ten thousand, two hundred seventy-three

| Ten Thousands | Thousands | Hundreds | Tens | Ones |
|---|---|---|---|---|
| | | | | |

Standard form:

Learn **Model multiplication with regrouping in thousands, hundreds, tens, and ones.**

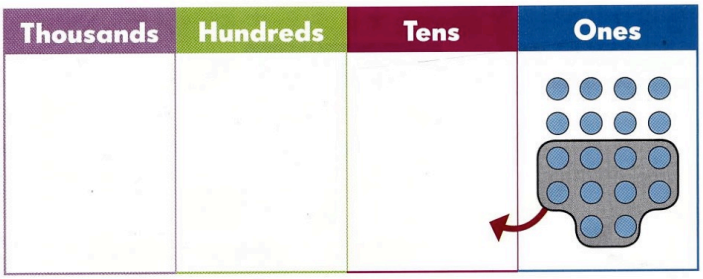
Roy's Market sold 2,476 oranges. Ana's Market sold 3 times as many oranges as Roy's Market. How many oranges did Ana's Market sell?

2,476 × 3 = ?

**Step 1** Multiply the ones by 3.

6 ones × 3 = 18 ones

= 1 ten 8 ones




| Th | H | T | O |
|---|---|---|---|
| | | 1 | |
| 2, | 4 | 7 | 6 |
| × | | | 3 |
| | | | 8 |

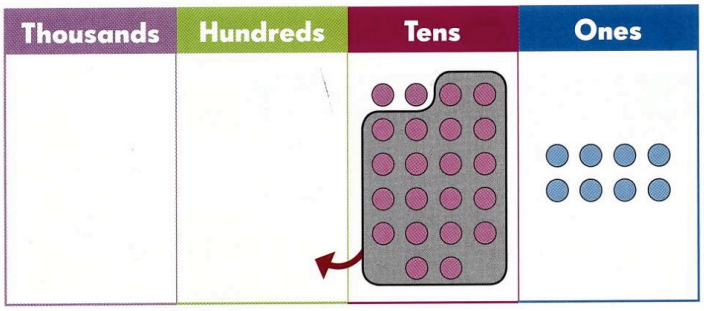
**Step 2** Multiply the tens by 3.

7 tens × 3 = 21 tens

Add the tens.

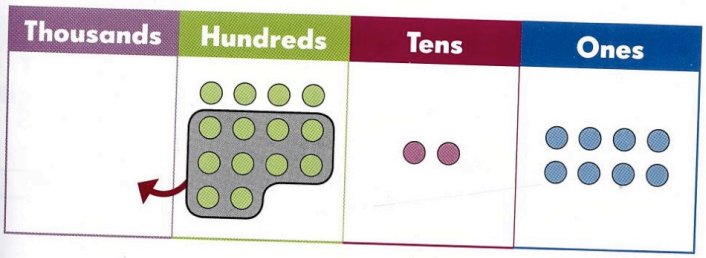
21 tens + 1 ten = 22 tens

= 2 hundreds 2 tens



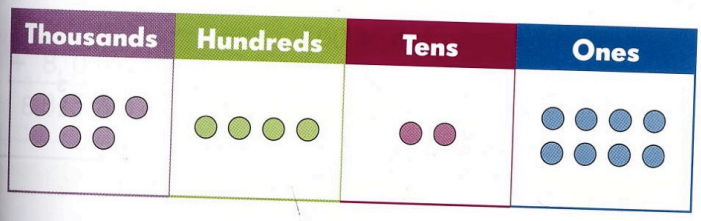

| Th | H | T | O |
|---|---|---|---|
| | 2 | 1 | |
| 2, | 4 | 7 | 6 |
| × | | | 3 |
| | | 2 | 8 |

**Step 3** Multiply the hundreds by 3.
4 hundreds × 3 = 12 hundreds
Add the hundreds.
12 hundreds + 2 hundreds
= 14 hundreds = 1 thousand 4 hundreds




| Th | H | T | O |
|---|---|---|---|
| 1 | 2 | 1 | |
| 2, | 4 | 7 | 6 |
| × | | | 3 |
| | 4 | 2 | 8 |

**Step 4** Multiply the thousands by 3.
2 thousands × 3 = 6 thousands
Add the thousands.
6 thousands + 1 thousand = 7 thousands




| Th | H | T | O |
|---|---|---|---|
| 1 | 2 | 1 | |
| 2, | 4 | 7 | 6 |
| × | | | 3 |
| 7, | 4 | 2 | 8 |

Ana's Market sold 7,428 oranges.

Lesson

# 3.3 Modeling Division with Regrouping

**Lesson Objectives**

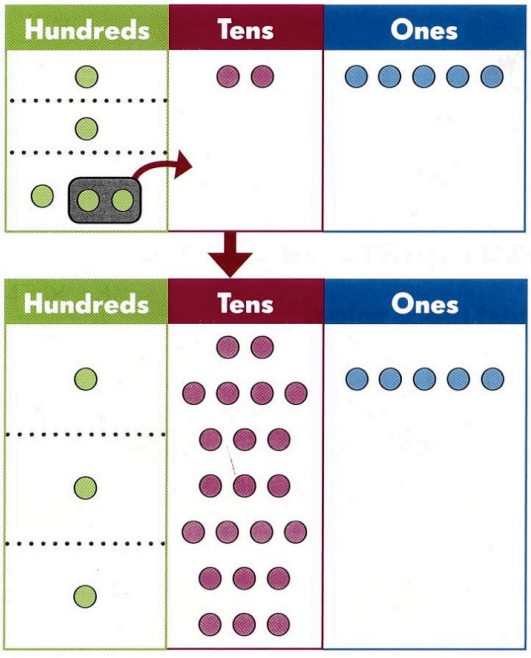
- Model regrouping in division.
- Divide a 3-digit number by a 1-digit number with regrouping.

**Vocabulary**
regroup

Learn **Model division with regrouping in hundreds, tens, and ones.**

A farmer sells his crops to 3 restaurants. He divides 525 heads of lettuce equally among the 3 restaurants. How many heads of lettuce does each restaurant receive?

525 ÷ 3 = ?




**Step 1**
Divide the hundreds by 3.

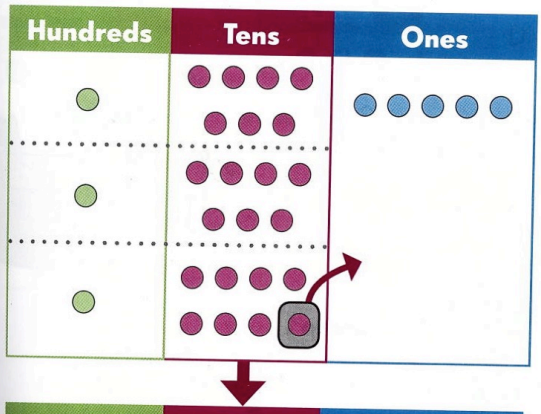
5 hundreds ÷ 3 = 1 hundred with 2 hundreds left over

```
    1
3)5 2 5
  3 0 0
  2
```

**Regroup** the hundreds.
2 hundreds = 20 tens

Add the tens.
20 tens + 2 tens = 22 tens

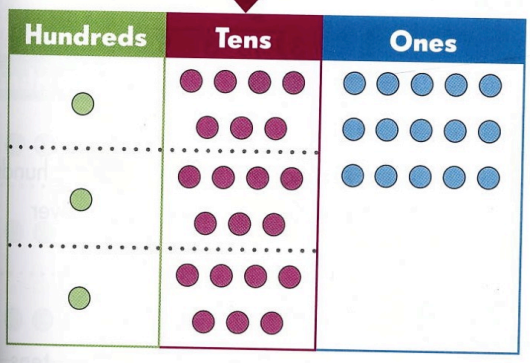
```
    1
3)5 2 5
  3 0 0
  2 2 5
```




**Step 2**
Divide the tens by 3.

22 tens ÷ 3 = 7 tens
with 1 ten left over

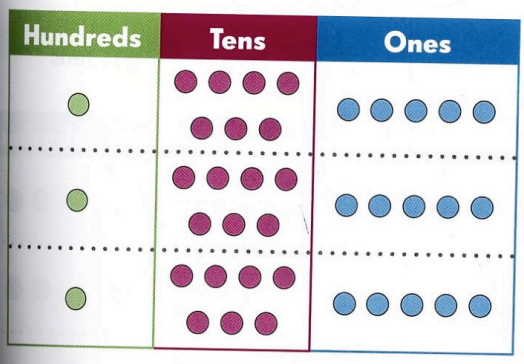
```
   1  7
3)5  2  5
   3  0  0
   2  2  5
   2  1  0
      1
```




Regroup the ten.
1 ten = 10 ones

Add the ones.
10 ones + 5 ones = 15 ones

```
   1  7
3)5  2  5
   3  0  0
   2  2  5
   2  1  0
      1  5
```




**Step 3**
Divide the ones by 3.

15 ones ÷ 3 = 5 ones

```
   1  7  5
3)5  2  5
   3  0  0
   2  2  5
   2  1  0
      1  5
      1  5
         0
```

So, 525 ÷ 3 = 175.
Each restaurant receives 175 heads of lettuce.

Learn **Divide by a 1-digit number with no remainder.**

At a carnival, 6,381 apples are given out to children.
Each child receives 3 apples.
How many children are at the carnival?

**Step 1**
Divide 6 thousands by 3.
6 thousands ÷ 3 = 2 thousands
= 2,000

**Step 2**
Divide 3 hundreds by 3.
3 hundreds ÷ 3 = 1 hundred
= 100

**Step 3**
Divide 8 tens by 3.
8 tens ÷ 3 = 2 tens with 2 tens left over
= 20 with 20 left over

**Step 4**
Divide 21 ones by 3.
21 ones ÷ 3 = 7 ones
= 7

When 6,381 is divided by 3, the quotient is 2,127 and the remainder is 0.

There are 2,127 children at the carnival.

| Th | H | T | O | |
|---|---|---|---|---|
| | | **2** | | |
| 3) 6 | , 3 | 8 | 1 | |
| **6** | , 0 | 0 | 0 | ← 2,000 × 3 |

| | | | | |
|---|---|---|---|---|
| | 2 | **1** | | |
| 3) 6 | , 3 | 8 | 1 | |
| 6 | , 0 | 0 | 0 | |
| | 3 | 8 | 1 | |
| | **3** | 0 | 0 | ← 100 × 3 |

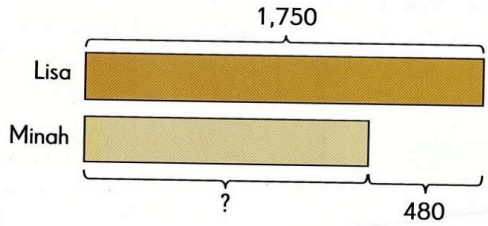
| | | | | |
|---|---|---|---|---|
| | 2 | 1 | **2** | |
| 3) 6 | , 3 | 8 | 1 | |
| 6 | , 0 | 0 | 0 | |
| | 3 | 8 | 1 | |
| | 3 | 0 | 0 | |
| | | 8 | 1 | |
| | | **6** | 0 | ← 20 × 3 |
| | | **2** | 1 | |

| | | | | |
|---|---|---|---|---|
| | 2, | 1 | 2 | **7** ← quotient |
| 3) 6 | , 3 | 8 | 1 | |
| 6 | , 0 | 0 | 0 | |
| | 3 | 8 | 1 | |
| | 3 | 0 | 0 | |
| | | 8 | 1 | |
| | | 6 | 0 | |
| | | 2 | 1 | |
| | | **2** | **1** | ← 7 × 3 |
| | | | **0** | ← remainder |

**Learn** **Solve 3-step problems using models.**

Lisa had 1,750 stamps. Minah had 480 fewer stamps than Lisa.
Lisa gave some stamps to Minah.
Now, Minah has 3 times as many stamps as Lisa.

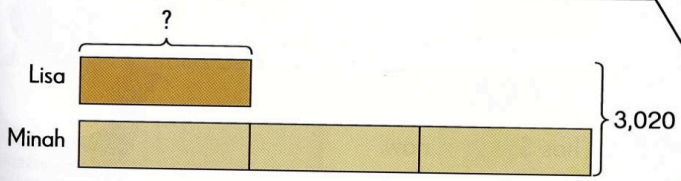
**a** How many stamps did Minah have at first?


1,750 − 480 = 1,270
Minah had 1,270 stamps.

**b** How many stamps does Lisa have now?

1,750 + 1,270 = 3,020





4 units ⟶ 3,020
1 unit ⟶ 3,020 ÷ 4 = 755
Lisa has 755 stamps now.

Lesson

# 5.1 Average

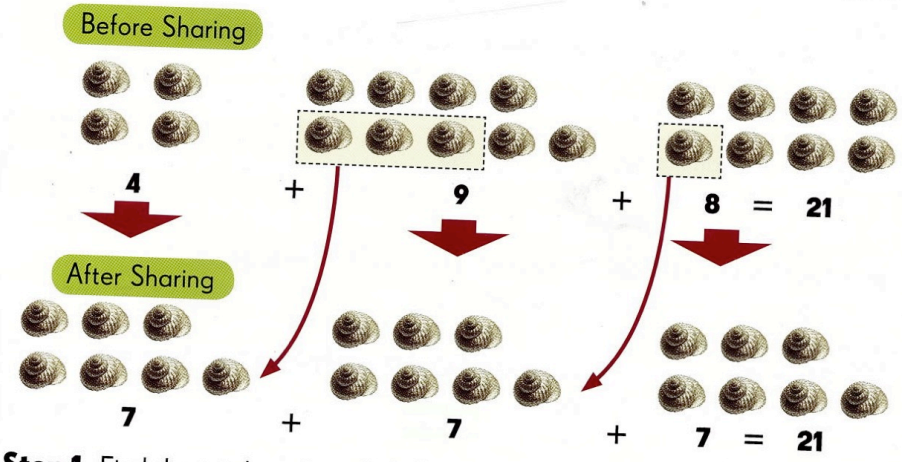
**Lesson Objective**

- Describe a data set using the average or mean.

**Vocabulary**
average
mean

Learn **Divide to find the average.**

Andrew has 4 shells, Beth has 9 shells, and Cynthia has 8 shells. If all the shells are shared equally among the children, how many shells would each child get?




**Step 1** Find the total number of shells.
4 + 9 + 8 = 21 shells

**Step 2** Divide the total number of shells by the number of children.
21 ÷ 3 = 7 shells
Each child gets 7 shells.

21 ÷ 3 can also be written as $\frac{21}{3}$.

$$\text{Average number of shells for each child} = \frac{\text{Total number of shells}}{\text{Number of children}}$$

The number of shells that each child will get if they are shared equally is 7.
The average of 4, 9, and 8 is 7.

Lesson 6.1

# Adding Fractions

**Lesson Objectives**

- Find equivalent fractions.
- Add unlike fractions.

**Vocabulary**

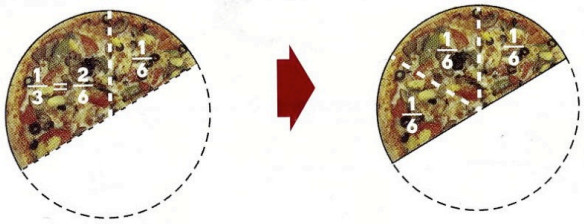
| | |
|---|---|
| numerator | equivalent fraction |
| denominator | unlike fraction |

Learn **Add using equivalent fractions.**

Lisa ate $\frac{1}{3}$ of a pizza. Katie ate $\frac{1}{6}$ of the same pizza.
What fraction of the pizza did they eat altogether?

First, find an **equivalent fraction** to $\frac{1}{3}$ that has the same **denominator** as $\frac{1}{6}$. Multiply the **numerator** and the denominator by the same number.

$$\frac{1}{3} \xrightarrow{\times 2} \frac{2}{6}$$




Then add.

$$\frac{1}{3} + \frac{1}{6} = \frac{2}{6} + \frac{1}{6}$$
$$= \frac{3}{6}$$
$$= \frac{1}{2}$$

They ate $\frac{1}{2}$ of the pizza altogether.


To add **unlike fractions**, first change them to fractions with the same denominator. Then add.

Lesson 6.3

# Mixed Numbers

**Lesson Objectives**

- Write a mixed number for a model.
- Draw models to represent mixed numbers.

**Vocabulary**
mixed number
simplest form

Learn **Some situations can be described using a whole number and a fraction.**

1 whole 1 whole 1 half

$$2 + \frac{1}{2} = 2\frac{1}{2}$$

There are $2\frac{1}{2}$ watermelons.

$2\frac{1}{2}$ is a mixed number.


When you add a whole number and a fraction, you get a **mixed number**.

## Guided Practice

**Find the mixed number.**

1. Hugo drank 2 bottles of apple juice. Gary drank $\frac{1}{4}$ bottle of apple juice. How many bottles of apple juice did they drink altogether?

$2 + \frac{1}{4} =$ ____

They drank ____ bottles of apple juice altogether.